



Conserving animal biodiversity through the protection of habitats amidst the expansion of urban areas



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Overview

The conservation of animal biodiversity in areas of urbanisation has been a major issue in recent years. The World Wide Fund for Nature (WWF) defines animal biodiversity as all the different types of organisms living in one area (1). This may include a variety of animals, plants, fungi, and even microorganisms like bacteria. These organisms work together to maintain balance and support. Biodiversity supports everything in nature that humans and organisms need in order to survive, such as food, clean water, and prevention from extreme weathers (1). However, WWF's living planet report 2022 shows that wildlife populations have declined by an average of 69% over the past 50 years (2). Urbanisation is a big cause of the decline of animal biodiversity. Urbanisation is when the proportion of people living in urban areas increases. This causes the decline of animal biodiversity because habitats are lost through processes such as deforestation and massive changes in the environment. Habitat loss can prevent safe animal movement across the landscape, restricting expression of normal behaviours and denying animals' access to basic needs such as food, water and shelter (3). Other impacts include stress, injury, illness, pain, psychological distress which can end up in death for the animals themselves. The downside of this is that it causes animal extinctions. With animal extinction, the possibilities of biodiversity will decrease and ecosystems being damaged will likely increase (4).

Some organisations have been working towards combating the issue of decreasing animal biodiversity. An example of this is the World Wide Fund for Nature (WWF) mentioned above. WWF is an organisation that works to help communities conserve the natural resources they depend upon. As aforementioned, this may include food, water and shelters. An action that WWF has done in order to face the issue is transforming the markets and policies towards a sustainable one in order to protect and restore species and their habitats (5).

Another organisation that comes up regarding protecting animal biodiversity is the International Union for Conservation of Nature (IUCN). IUCN is also an organisation that has many goals relating to preserving biodiversity. IUCN monitors species and ecosystems, and steers policy and action to protect and restore the natural world (6).



Definitions of important terms

Animal Biodiversity

Animal biodiversity refers to all the different types of animals living in an area in order to maintain balance and support life. Each species and organisms work together in the ecosystems. Biodiversity includes not only the variety of different animals but also the genetic difference between animals of the same species and between ecosystems (7).

Urbanisation

Urbanisation is the increase in the proportion of people living in cities (urban) areas. It's the process caused by people moving from rural areas to urban areas. When urbanisation takes place, large areas of land need to be available to be used for infrastructure, which is accomplished through land cultivation. This leads to increased deforestation and habitat loss as land is cleared (8).

Ecosystems

A group of population living together and interacting with each other within a given area including its abiotic factors (non-living factors such as the air and sunlight) (9).

Habitat Loss

Habitat loss refers to the reduction in the area where animals, species and organisms can survive and reproduce. It is also known as habitat destruction and it is a major consequence of human activities such as deforestation for urbanisation (4).



Timeline of key events

1980s: National Forum on Biodiversity

In the mid 1980s, Earth's "biodiversity crisis" erupts as a critical conservation issue at the National Forum on biodiversity. Organised by the national research council and spearheaded by Harvard University biologist Edward O. Wilson (10).

1992: Convention on Biological Diversity established

The convention on biological diversity was adopted in the earth summit in 1992 (11). The convention on biological diversity is a legally binding treaty with three main goals which include, conservation of biodiversity, sustainable use of biodiversity, and the fair and equitable sharing of the benefits arising from the use of genetic resources (12).

2019: Intergovernmental science-policy platform on biodiversity and ecosystem services report

The IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) global assessment on biodiversity and ecosystem services gets approved in 2019 (13). IPBES states that they are "an independent intergovernmental body which provides policymakers with objective scientific assessments about the state of knowledge regarding the planet's biodiversity, ecosystems and the benefits they provide to people, as well as the tools and methods to protect and sustainably use these vital natural assets." (14).

2022: COP15 Conference

The United Nations Convention on Biological Diversity's 15th Conference of the Parties (COP15) ended on December 19, 2022. After the two weeks of negotiations, countries have reached an agreement on how to preserve and conserve global biodiversity. According to the Aquatic Life Institute, countries "adopted the Kunming-Montreal Global Biodiversity Framework (GBF) that includes 4 broad goals to be achieved through 23 specific targets which include securing the safe, legal and sustainable use and trade of wild species by 2030 as well as sustainably managing areas under agriculture, aquaculture, fisheries, and forestry among other things." (15).



Position of key nations

Singapore

Singapore is one of the leading countries that are able to maintain animal biodiversity while still urbanising the areas. According to the World Economic Forum, “Its National Biodiversity Centre has developed an app that allows members of the public to send photos of plants and animals to a central database”. This information is crucial for the decision making process regarding animal biodiversity and allows more knowledge on it (16). Singapore’s urban greening development policies have also boosted biodiversity. Although Singapore’s population density has doubled between 1970 and 2020, the city’s green areas have expanded from 36% to 47% of its total land area (16). Singapore has successfully blended innovation and green spaces together. It is a global leader in urban sustainability.

China

China has introduced government targets such as the ecological red line policy to protect the Chinese mainland from development by 2035. These include creating national parks, stricter supervision of conservation and a streamlining of environmental oversight agencies (19). Although China has taken multiple measures in order to preserve animal biodiversity, it still has to improve in many areas. According to the WWF, the rapid development and urbanisation in China has been increasing ecological footprint and has led to the decrease in animal biodiversity. It states, “development, species and ecological civilization”, tracked 2,419 representative populations of 682 vertebrates’ species in China and found that almost half of China’s terrestrial vertebrates have vanished in the last 40 years.” (20).

Netherlands

Dutch natures are protected by several national and international laws and rules. The National Ecological Network (NEN) and Natura 2000 created in the Netherlands are designed to protect nature areas, and to consolidate them by linking them more effectively with each other and with surrounding farmland (21). In the Dutch city of Eindhoven citizens are encouraged to not to clear away fallen leaves in parks or gardens, according to The Guardian newspaper. It is said that the city wants to boost diversity in the urban areas through protecting insect life (16). The Netherlands use other techniques in order to conserve animal biodiversity.



Australia

Australia realises the importance of animal biodiversity and works towards conserving it over the next decade. Australia's Strategy for Nature guides how governments, the community, industry and scientists manage and protect Australia's plants, animals and ecosystems until 2030. The Australian Government also created a National Landcare Program. This program will invest \$1 billion over the next four years to help support the protection, conservation and rehabilitation of Australia's natural environment (22).

The Australian government sees that the conservation of biodiversity in private land is important to protect Australia's biodiversity. The government has created incentives for private landholders to conserve animal biodiversity. Incentives can be financial or non-financial, and are offered by governments as part of an environmental program. Some incentives are linked to: management plans, placing covenants on land, conservation agreements, or to other permanent protection tools such as formal reservation (16).



Suggested solutions

The expansion of urbanising areas has made the conservation of animal biodiversity a challenge over the past years, in the present, and even for the future. The construction of roads and/or buildings in urban areas can cause the life of animals to be at risk which leads to decreasing animal biodiversity in the world (2). Data have shown a clear decrease in animal biodiversity and increased risk of animal lives in the world. Although actions are taken to increase or conserve biodiversity, it is certainly not enough.

The increase of green spaces in urban areas (areas of a city that is preserved, kept, through urbanisation) is a critical way that countries can positively impact and conserve animal biodiversity. To elaborate, states and governments can ensure that animal biodiversity can be protected through creating regulations of how much green spaces there must be during the process of urbanisation. This will allow the habitats to be protected and not be fully destroyed through urbanisation.

Another way that biodiversity can be preserved even through the process of urbanisation that is needed for growing populations is for governments to support local and regional projects aimed at tackling biodiversity loss. This can come in forms such as government subsidies which are money given to these projects in support for tackling biodiversity loss actions. These subsidies may allow these projects to grow and be more impactful for reducing biodiversity loss.



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